CLAIMS

What is claimed is:

1. A laser capture microdissection method, comprising:

providing a sample that is to undergo laser capture microdissection;

positioning said sample on a translation stage of a laser capture microdissection instrument and within an optical axis of said laser capture microdissection instrument, said translation stage including a vacuum chuck having a beam path hole through which said optical axis extends;

holding a sample holder in a position over said beam path hole, said sample being located upon said sample holder;

providing a transfer film carrier having a substrate surface and a laser capture microdissection transfer film coupled to said substrate surface;

placing said laser capture microdissection transfer film in juxtaposition with said sample with a pressure sufficient to allow laser capture microdissection transfer of a portion of said sample to said laser capture microdissection transfer film, without forcing nonspecific transfer of a remainder of said sample to said laser capture microdisection film; and then

transferring a portion of said sample to said laser capture microdissection transfer film, without forcing nonspecific transfer of a remainder of said sample to said laser capture microdissection transfer film.

2. The method of claim 1, further comprising translating said sample holder with regard to said translation stage.

3. The method of claim 1, wherein holding a sample holder in said position over said beam path hole includes holding said sample holder with a force and modulating said force.

4. The method of claim 1, further comprising pulling a vacuum on said sample holder.

5. The method of claim 1, further comprising applying a force to an edge of said sample holder to move said sample holder with regard to said translation stage.

6. The method of claim 1, further comprising moving said sample holder in any direction parallel with a top surface of said translation stage without constraint.

7. A laser capture microdissection instrument, comprising:

a translation stage; and

a vacuum chuck coupled to said translation stage.

8. The laser capture microdissection instrument of claim 7, wherein said vacuum chuck includes a beam path hole.

9. The laser capture microdissection instrument of claim 8, wherein a top surface of said vacuum chuck includes a first manifold hole and a second manifold hole.

10. The laser capture microdissection instrument of claim 9, wherein a sample holder is placed over said beam path hole, said first manifold hole, and said second manifold hole.

11. The laser capture microdissection instrument of claim 10, wherein there is leakage around a perimeter of said sample holder which modulates a force holding said sample holder in place.

12. The laser capture microdissection instrument of claim 7, wherein said vacuum chuck includes a conduit.

13. The laser capture microdissection instrument of claim 12, wherein said conduit is connected to a circular manifold that is coupled to a first manifold hole and a second manifold hole.

14. The laser capture microdissection instrument of claim 7, wherein there are no structures that project above a top surface of said vacuum chuck.

15. The laser capture microdissection instrument of claim 7, further comprising a transfer film carrier handling subsystem connected to said translation stage.

16. The laser capture microdissection instrument of claim 7, further comprising an illumination/laser optical subsystem coupled to said translation stage.

17. The laser capture microdissection instrument of claim 7, further comprising a manual joystick subsystem connected to said translation stage.

18. An inverted microscope, comprising:

a translation stage; and

a vacuum chuck connected to said translation stage.

19. The laser capture microdissection instrument of claim 18, wherein said vacuum chuck includes a beam path hole.

20. The laser capture microdissection instrument of claim 19, wherein a top surface of said vacuum chuck includes a first manifold hole and a second manifold hole.

21. The laser capture microdissection instrument of claim 20, wherein a sample holder is placed over said beam path hole, said first manifold hole, and said second manifold hole.

22. The laser capture microdissection instrument of claim 21, wherein there is leakage around a perimeter of said sample holder which modulates a force holding said sample holder in place.

23. The laser capture microdissection instrument of claim 18, wherein said vacuum chuck includes a conduit.

24. The laser capture microdissection instrument of claim 23, wherein said conduit is connected to a circular manifold that is coupled to a first manifold hole and a second manifold hole.

25. The laser capture microdissection instrument of claim 18, wherein there are no structures that project above a top surface of said vacuum chuck.

26. The inverted microscope of claim 18, further comprising a transfer film carrier handling subsystem connected to said translation stage.

27. The inverted microscope of claim 18, further comprising an illumination/laser optical subsystem coupled to said translation stage.

28. The inverted microscope of claim 18, further comprising a manual joystick subsystem connected to said translation stage.